

THE I-R ANNUAL INDEX

index to volume VII (1965)
of Industrial Research

Bold type refers to titles of feature articles and issue numbers in Vol. VII of Industrial Research. Light numerals indicate page numbers.

A
Academic Spinoffs4:62
Accelerators3:42; 11:9
Acoustics10:92
Also see Ultrasonics
Activation analysis7:82
Advances in Chemical Instrumentation7:52
Advances in Electrical Instrumentation7:60
Advances in Physical Instrumentation7:69
Advances in Radiation Instrumentation7:76
Advances in Thermal Instrumentation7:84
Advances in Vacuum Instrumentation7:92
Aerospace1:33, 47, 52; 6:130
Also see Space
After Apollo—Then What?8:7
Air Force1:31, 44
Also see Aerospace
Air pollution2:43
Alloys2:51; 2:73; 6:114
Also see Metals; specific alloys
Aluminum2:47; 6:115; 8:24; 9:61
American Chemical Society National Meeting9:81
American Institute of Chemists10:102
American Standards Assn.5:7
Amino acids1:72
Amplifiers6:57; 8:48; 10:108
Analytical instruments6:42
Also see Instruments
Another Preconceived Report From Congress13:11
Apollo project1:44; 3:86; 5:41
Argue, Dr. Gary, specialist-research, Atomics International Div., North American Aviation Inc. (author)5:85
Artificial limbs3:40; 6:47
Astronomy1:45, 66
Atkins, Robert M., president, Atkins Technical Inc. (author)7:85
Atomic Absorption Spectroscopy2:68
Atomic Energy Commission1:36, 44, 48; 7:82; 8:59; 11:9
B
Bacteriological warfare9:70
Balances2:40; 6:46
Bancroft, Dr. George H., president, American Vacuum Society (author)10:76
Basic or Applied Research?3:7
Bayard-Alpert gage7:95; 10:82
Behavior of Materials in Corrosive Environments12:76
Behavior of Materials at Cryogenic Temperatures12:52
Behavior of Materials Exposed to Radiation12:84
Behavior of Materials at High Temperatures12:60
Behavior of Materials under High Vacuum12:68
"BEMs"1:73
Beta ray gages7:77
Betatron3:45
Biological weapons9:70
Biology8:68; 9:47, 70
Biomedical instrumentation1:50; 6:47; 7:74
Biomedical research3:34; 6:130
Also see Medicine
Birch, R. E., research director, Garber Research Center, Harbison-Walker Refractories Co. (author)11:45
Bonding, solid state3:75
Bowles, Dr. R. E., president, Bowles Engineering Corp. (author)13:44
Breeder Reactors—

Tomorrow's Power Plants6:58
Brunton, Dr. Donald C., president, Brun Corp. (author)7:77
Byrne, Dr. Francis P., manager, analytical chemistry, Westinghouse Electric Corp., R&D Center (author)7:53

C
Cameras. See Photography
Cardiac pacemaker3:40
The Case for Going to the Moon1:64; 2:78; 3:67
The Case for Life Beyond the Earth1:64; 2:78
The Case for Technological Transfer3:67
Cathode ray tubes8:41
Chemical industry1:38; 6:130
Chemical weapons9:70
Chemicals6:98
Chemists and chemistry1:50; 2:36; 3:47; 3:68; 5:75; 5:85; 6:42; 7:52; 10:101
Chromatography6:48; 9:82; 10:108

Also see Gas
Chromatography, specific equipment
Clough, Philip J., assistant director of research, National Research Corp. (author)9:61
Coatings6:110; 7:26, 55 and stress analysis5:68
Cobalt magnets9:51
Coddington, Dean C., industrial economist, Denver Research Institute (author)4:63
Cold. See Cryogenics; Freezing; Refrigeration; Temperature
Components3:73; 6:122, 127; 8:39, 44, 46
Also see Electronics; specific components
Composites6:112
Also see Whiskers
Computers1:50; 5:85; 6:130; 10:107

Also see specific fields of use
design by11:55
joint conference and exhibit11:81
for medical diagnosis3:38
and moon program3:74
new equipment6:50
and NMR8:65
Comsat1:46; 10:7
Congress4:81; 9:91; 13:11
Also see Government; specific programs
The Consequences of Science7:7
Contract Research in Europe2:59
Controlling devices6:53; 10:108
Also see specific types
Converters3:69; 5:67; 11:66
Cooling equipment. See Cryogenics; Refrigeration
Corporate Research and Profitability12:11
Corrosive effects12:76
Cryogenic Refrigeration Systems10:86
Cryogenic Vacuum Pumps10:67
Cryogenics1:50; 6:130
behavior of materials in12:53
heat switch8:24
liquids6:113
new equipment6:90
refrigeration systems10:87, 107

and technological transfer3:70
Cryopumps10:67
Cryosorption10:67
Crystallization3:52
Crystals, metallic12:57, 58
Current comparator6:53; 7:62
Cyclotron3:45
D
Danilov, Dr. Victor J., executive editor,

Industrial Research (author)1:27; 4:37; 5:38
Defense1:7, 31, 48, 52; 6:130
Also see Warfare
Defense Dept.1:46, 52; 4:69
Dehydration of food3:61
Design by Computer11:55
Devious Ways of Product Development13:65
Dewars3:70; 6:90
Differential thermal analysis3:51; 7:58
Diffraction7:58
Direct energy conversion3:69
Displays3:73; 5:80
Drugs and drugs industry1:38, 50; 2:59
Ductility12:58
Dunnavant, Dr. William R., senior research chemist, Battelle Memorial Inst. (author)3:50

E
EBR breeder reactors6:60
Eddy-current devices9:59
Edgerton-Wyckoff shutters11:64
EDP equipment6:50
Also see Computers
Effects of Laser Radiation9:44
Elastomers6:119
Electricity1:39
Also see Electronics; specific equipment, uses
advances in instrumentation7:60
and biomedical engineering3:35
Electrochemical Devices5:85
Electrochemistry5:85
Electron beam welding3:75
Electron paramagnetic resonance8:64
Electron emission9:50
Electronics1:34, 50; 6:57, 130
Also see specific tools, uses
components3:73; 6:122; 11:70
The Emerging Giant11:70
Biomedical Engineering3:34
Emission spectroscopy9:47
Energy3:69
Also see Power; specific kinds
Engineers3:69; 9:84
Epitaxy10:60
Europe, contract research in2:58
Experimental Stress Analysis5:67
Exploring and Exploiting the Oceans2:5
Exposition of Chemical Industries12:91

F
Fehner, Dr. F. P., research chemist, Corning Glass Works (author)10:54
Feng, Dr. Paul Y., scientific adviser, IIT Research Institute (author)12:84
Ferries8:53
Also see Metals
Fiber optics6:76
Filters3:72; 5:79
Filtration6:83
Flame emission7:53
Flexible Patent Policy9:9
Flexure fatigue apparatus8:24
Flow meters7:72; 10:109
Fluid Amplifiers13:44
Fluorescence7:53
Food1:40; 3:60; 5:90
Food & Drug Administration1:50
Food Technology3:60
France, and supersonic transport1:47
Free Enterprise in Space10:7
Freezing3:60; 5:90; 6:59
Fuel cells3:69; 6:57
Furnaces6:59
Also see Vacuum
Furniture6:62

G
Gages6:53; 7:95; 10:77
Also see Strain gages
Gamma rays7:77
Gas chromatography2:41, 84; 5:82; 7:55; 9:82
Gases6:42; 7:59
Also see Vacuum; specific gases
conductivity at high temperatures3:79
industrial6:113
laser damage9:49
poison9:69
Gel permeation chromatography7:56
Gemini project1:44
Geochemistry5:75
Geophysical equipment6:44
Germ warfare9:70
Glass11:48
Glass electrode chemistry6:42

Goldfarb, Stanley R., training director, Veeco Instruments Inc. (author)10:92
Government1:7, 27, 50; 6:130
Also see Defense
and European contracts2:59
and university research4:81
The Government's Role in University Research4:80
Granzeier, Frank J., research director, Industrial Research (author)9:69; 10:100
Gross national product (GNP)1:31; 8:50
Grove, Dr. Ewart L., senior chemist, IIT Research Institute (author)2:37
Gyros4:24; 5:90

H
Hagenbach, G. F., division engineer, Linde Div., Union Carbide Corp. (author)10:67
Halaby, Dr. S. A., manager, electronic materials research, Corning Glass Works (author)10:55
Hansen, John V. E., director of marketing and contracts, National Research Corp. (author)9:61
Heart3:40; 6:47
Heat and heating6:59
Also see Temperature
and magnets9:57
polymers and thermal barrier3:50
Helium6:113; 10:67, 87; 10:9; 11:77
Helpful But Outdated4:7
Hellmes, Dr. E. C., senior physicist, 3M Co. (author)12:52
Hermach, F. L., electrical instruments section, National Bureau of Standards (author)7:60
Herron, W. C., program manager, materials science laboratory, Lockheed-Georgia Co. (author)12:76
Holcomb, Jerome L., NMR product manager, Varian Associates (author)8:64
How "Successful" Are Research Parks?1:16
Humidity sensors6:53
Hydrogen10:67, 87

I
IDiot3:74
Image converters11:66
Industrial gases6:113
Industrial parks1:16; 4:23; 5:44
Industry, states try to attract5:39
Inertial guidance4:24
Industrial Research, National Conference on12:11; 13:57
Infrared11:71
detectors10:90
spectrometers7:55
spectrophotometers6:88
Instrument Society of America Conference & Exhibit10:105
Instruments1:39; 6:41; 7:52, 60, 69, 76, 84, 92; 10:105
Also see Systems; specific instruments
Insulation3:76; 10:18; 11:24
ionization gage8:22; 10:80, 97
I-R 100 Competition13:74
I-R Report on Components8:39
Iron6:114; 11:50
Issues in Research Administration4:55

J
Johnson, E. O., engineering manager, Components & Devices Div., Radio Corp. of America (author)8:39
Joule-Thomson cycle10:87

K
Kelsey, Robert H., project leader, P. R. Mallory & Co. (author)2:47
Kerr cell11:64
Kidney machines6:47
Kiverson, Gilbert, senior engineer, Westinghouse Electric Corp. (author)11:62
Krock, Dr. Richard H., group manager, P. R. Mallory & Co. (author)2:47

L
Laboratories1:46; 6:62
Laboratory supply houses6:154
Ladder polymers3:59
Lasers and laser equipment1:50; 2:90; 3:75; 6:66; 7:74; 9:44; 9:46; 10:90; 11:67

Leak detection5:81; 6:53;
7:72; 10:92, 105; 11:69
Leak Detection10:92
Life, extraterrestrial1:64; 2:78
Light6:67
Also see Lasers;
Photography, etc.
Lubricants5:24; 9:22

M

McClary, Urie, Jr., senior applications engineer, Consolidated Electrodynamics Corp. (author)5:75
McLeod gage7:95; 10:78
Madell, Dr. John T., nuclear engineer, Reactor Physics Div., Argonne National Laboratory (author)8:58
Magnetic fields5:24
Magnetron gages10:84
Magneto-optic effect10:62
Magnets6:68; 9:51
Mahar, James F., senior economist, Denver Research Inst. (author)4:62
Man in the Sea11:72
Management3:81; 4:64
Mansell, Ralph E., research chemist, Dow Chemical Co. (author)2:68
Maraging steels3:75
Mariner probes1:45; 2:80
The Market for Components8:44
Mars1:45; 2:79
Martin, Dr. John H., associate physicist, Particle Accelerator Div., Argonne National Laboratory (author)3:42
Masers. See Lasers.
Mass spectrometry5:75; 6:88; 7:59; 7:72, 98; 10:36
Mass spectroscopy2:84; 5:75
Materials1:40; 50; 6:117; 12:52
Also see Testing; specific materials.
and technological transfer to moon3:75
behavior in corrosive environments12:76
behavior at cryogenic temperatures12:52
behavior exposed to radiation12:84
behavior at high temperatures12:60
behavior under high vacuum12:68
Measurement6:70; 10:105
The Measurement of Vacuum10:76
Medicine1:50; 3:34; 6:47; 130; 7:74; 10:91
Also see specific equipment.
Metals1:50; 2:75; 3:75; 6:110, 112, 114, 115; 7:78; 10:91; 11:68
Meteorology6:44
Microcircuits6:122
Micromachining9:47
Microscopes6:66; 7:6; 7:59; 10:106
Microwaves6:122; 11:70
Missiles1:46
Molecular pumps7:95
Molybdenum6:115
Moon1:44; 65; 2:78; 3:67
Mossbauer effect1:58

N

NASA1:34, 44, 52; 6:7, 22 and academic spinoffs4:69 facilities in the South3:40 and Mars landing2:81 and patents9:9 publications8:22; 9:24 and technological transfer from moon program3:67
National Aeronautics & Space Administration. See NASA.
National Bureau of Standards5:7
National Conference on Industrial Research12:11; 13:57
National Institutes of Health4:38
National Science Foundation1:36; 4:7, 39, 81; 5:39
National Standards Needed?5:7
Navy1:46; 11:73
Nervous system3:35
New Centers of Excellence4:36
New Component Products4:46
Nial, Walter R., president, Aero Vac Corp. (author)12:68
Nickel6:115; 9:53
Nike-Zeus program10:90
Nimbus satellite1:46
1965 I-R Forecast1:26
1965 I-R Guide to Research Sites5:38
Nitrogen6:113; 10:74, 87; 11:77
NMR-EPR Spectroscopy8:64

The Nobel Prize1:56
Nondestructive Testing (NDT)6:68; 11:58
Nuclear energy, equipment1:48; 6:78; 9:82
Also see Radioactivity; specific uses.
accelerators3:42; 11:9
advances in instrumentation7:77
breeder reactors8:58
food irradiation3:62
Nuclear magnetic resonance7:58; 9:64

O

Oceans and oceanography1:48; 2:5; 9:82
man in the sea11:72
Offner, Dr. Franklin, professor of biophysics, Northwestern University (author)3:35
O'Neill, H. J., research chemist, IIT Research Inst. (author)2:37
Optical emission spectrometers7:52
Optics6:76; 81; 10:62
Also see Light;
Photography; specific equipment.
Orbiting observatories1:45
Oscilloscopes6:87; 7:66; 10:106
Outgassing12:70-74
Oxygen detectors8:53
Oxygen gage7:59

P

Packard, J. R., research physicist, 3M Co. (author)12:52
Paper industry1:40
The Particle Accelerator Competition11:9
Particle accelerators. See Accelerators.
Passivation12:76-78
Patents9:9
Permanent Magnets—Materials and Devices9:51
Pesticides1:50; 6:98; 9:84
Petroleum industry5:75
Pharmaceuticals. See Drugs
and drug industry.
Photoelasticity5:68; 7:70
Photoelectricity10:62
Photography1:50; 3:74; 6:81; 8:39; 11:62
Physics, Nobel prizes in1:58
Pirani gage10:77
Planets1:66; 2:81
Plasma arc furnace6:59
Plasma technology1:48
Plastics. See Polymers.
Platinum6:110
Polymers2:51; 3:50; 6:119; 7:58; 9:65

Polymers & the Thermal Barrier3:50
Potentiometers7:62
Powders9:60
Power6:67
Also see Energy; specific kinds.
President's Science Advisory Committee4:37
Price, Dr. Daniel O., director, Institute for Research in Social Science, University of North Carolina (author)4:55
Probst, Dr. Hubert B., head of refractory compounds, NASA Lewis Research Center (author)12:60
Process control2:39
Process equipment6:83
Prosthetic devices3:40; 6:47
Psychochemicals9:72
Pumps3:70; 6:83, 85, 90; 7:93; 11:23
Also see Vacuum.

Q

Quadrupole field7:96
Quadrupole mass filters5:79

R

Radar6:66
Radiation, material behavior in12:84
Radioactivity. See Nuclear energy; specific types.
Radiochemistry3:47
Radioisotopes3:49; 6:78
Rainmaking3:49
Ranger program1:44
Ransier, Robert M., assistant chief engineer, engineering and test instrumentation, Bell Aerosystems Co. (author)7:69
Rare earths1:50
Ready, John F., senior research scientist, Honeywell Inc. (author)9:44
Real or False Economy?1:7
Redner, Solomon, president,

Photolastic Inc. (author)5:67
Refractory materials6:110; 11:44
Refractory Materials11:44
Refrigeration6:59; 90; 10:87, 107
Also see Cryogenics;
Freezing.

Research advances1:43
Research associates4:60
Research in Components8:39
Research and development1:26, 31; 6:130

Also see Testing;
Universities; specific fields
basic vs. applied3:7
European contracts2:58
expenditures13:11
and national economy8:50
outdated reports on4:7
and patents9:9
sites5:38
Research funds1:31
Research institutes1:41

Research and the National Economy8:50
Research parks1:16; 4:44, 73; 5:59
Research trends1:51

Roberts, Dr. Richard W., chemistry research, General Electric Research Laboratory (author)7:92
Rocketry1:44; 2:80; 6:78
Also see specific programs.
Rover program1:44
Russians3:85; 1:44; 7:64; 8:60; 9:69; 11:76

Ruzic, Neil P., editor and publisher, Industrial Research (author)1:65; 2:78; 3:67

S

Safety, nuclear radiation and7:82
Sampson, Carol, assistant editor, Industrial Research (author)1:56
Sands, Dr. Richard S., professor of physics, University of Michigan (author)6:64
Satellites1:45; 2:86; 3:74; 10:7
Saturn rockets1:44; 5:40
Schonewald, Roger, chief development engineer, Cryogenators Div., North American Philips Inc. (author)10:87
Scientists10:100
Also see specific fields.
Sealab11:73
The Seduction of Science5:38
Semiconductors3:77
Should Scientists Be Licensed?10:100
Silicones3:55; 6:119

Sinclair, T. Frederic, technical editor, Industrial Research (author)11:73; 13:65
Sites, research5:38
Sjostrom, Loren B., vice president, Food & Flavor Laboratory, Arthur D. Little Inc. (author)3:60
Skinner, J. C., president, Thomas & Skinner Inc. (author)9:51
Smashing the Atom3:42

Smith, Charles R., vice president, Clyde Williams and Co. (author)2:59
Snap programs1:44
Snider, Robert G., executive director, Commonwealth Industrial Research Corp. (author)1:16
Solid state electronic equipment6:57
Also see specific equipment.
Solid state technology1:50; 3:75
Solid Thin Film Research10:54
Sound. See Acoustics;
Ultrasonics.

Space1:44, 52; 7:98; 8:7
Also see Aerospace; NASA; specific programs.
analytical chemistry and2:43
free enterprise in10:7
new equipment6:44
Spectrometers7:52
Also see Mass Spectrometry.
Spectroscopy2:68; 2:84; 6:66, 88; 8:64; 9:47, 81
Spectrum analyzer6:57
Spinoffs, academic4:62
Spin-spin coupling6:64
Spinning pumps7:94
Sputtering10:59; 12:72
Standards5:7; 10:105
Stars1:66
Steel1:40; 3:75; 6:113, 114; 7:24; 11:44, 68
Steroids8:65
Stirling cycle10:87

Stop the Motion!11:62
Strain gages3:71; 5:70; 7:71
Stress analysis5:67
Stroboscopic instruments11:62
Submarines1:48
Sun1:48
Superconductivity10:90
Surveyor flights1:44
Synchrotrons3:46

T

Tantalum3:77; 6:110; 10:64
Techno-economics6:130
Technological transfer3:67
Telescopes6:44
Television6:81, 98; 11:66
Temperature7:84
and magnets9:57
and material behavior12:60
Testing6:68, 70, 150; 11:68
Textiles7:24
Thermal barrier3:50
Thermal instrumentation advances7:84
Thermionic and thermoelectric converters3:70
Thermionics9:59
Thermonalyzer10:78
Thermocouple gages10:78
Thermocouples7:85; 8:41; 10:20
Thermoelectrics8:41
Thermogravimetric analysis3:51
Thermometers6:59; 7:85
Thermostats7:87
Thin films1:50; 6:122; 10:54
Time measuringMeasurement
Time-of-flight instruments5:79
Titanium1:50; 6:115
Tobacco industry7:77
Tonkin, Leo S., associate counsel, House Select Committee on Government Research (author)4:90
Toxic Weapons9:69
Tracer fluids10:92
Transducers3:36, 71; 5:90; 7:72
Also see specific uses.
Transistors8:40, 46
Tube furnace6:59
\$21-Billion for Research1:26

U

Ultrafine Powders9:60
Ultrasonics1:50; 3:37; 6:47, 68
Underwater defense1:48
Underwater vision11:66
Universities1:41
administration of research4:55
centers of excellence4:36
and European research2:62
and research parks. See Research parks.
and spinoffs4:62
Universities As Research Park Developers4:73

V

Vacuum6:130; 7:72; 11:23
Also see Leak detection equipment6:90
evaporation9:62; 10:56
deposition12:70-74
instrumentation advances7:92
material behavior12:69
measurement of10:76
Also see Furnaces;
Gages; Pumps; etc.
Vaporization12:66
Venus2:79
Vocalists6:53
Voltmeters6:57; 7:62

W

Warfare3:57; 9:69
Also see Defense.
Warsawsky, Erwin H., consultant, Mesa Scientific Corp. (author)11:55
Water1:48; 2:43, 79; 9:84
Water system, high-temperature6:59
Wattmeters7:64
Wear studies7:79
Weather satellites1:46
Weighing equipment6:46
Weiss, Herbert K., manager of mission analysis, Data Systems Div., Litton Industries Inc. (author)8:50
Welding3:75; 9:47
Whiskers2:46; 6:112
Whiskers—Their Promise & Problems2:46
Wood1:40; 6:117

X

X-rays and x-ray equipment6:68; 7:53
and biomedical engineering3:37
Xenon6:113

Z

Zandman, Dr. Felix, director of research, Vishay Instruments Inc. (author)5:67
Zero power reactors8:61

